THE CALIFORNIA ENERGY COMMISSION'S ELECTRICITY SUPPLY-SIDE POLICY, INFORMATION, PROGRAM AND REGULATION ACTIVITIES WHICH MAY GENERATE FUTURE DATA COLLECTION

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TABLE OF CONTENTS

1. PROLOGUE

The California Energy Commission is the principal and authoritative source of comprehensive California energy data for the Governor, the legislature, and the public. Four interlocking missions lie behind the Energy Commission's electricity supply and demand data collection:

- As the State's energy policy agency, the Commission is responsible for monitoring trends, understanding the 'big picture', identifying the consequences of alternative proposed policies, and advocating broad policy choices that will provide the greatest net benefits.

- As the State's energy analysis unit, the Commission is responsible for providing independent analysis of the current and proposed actions on behalf of other state, federal and local government agencies which need to know the impact of their activities on the electricity industry and, conversely, how the electricity industry impacts them.

- As the State's central repository for energy information, the Commission is responsible for maintaining, analyzing and disseminating energy information to public and private citizens in ways that support the developing private market.

- As a State energy services provider, the Commission is responsible for basing its renewables and siting programs on accurate and objective information, balancing private and public net benefits.

The Ad Hoc Information Committee (AHIC) has asked staff to describe how the Commission's goals and strategies, as they relate to supply-side energy, should be implemented through specific activities and why this is a role for the Energy Commission. By "activities", we mean the studies, data dissemination, analysis and recommendations which are the work products of the staff of the California Energy Commission.

The paper starts by setting context of describing the Energy Commission roles, goals and strategies which underlie the activities proposed herein. After the paper reviews electricity supply-side activity proposals, proposes a method for linking activities to specific data collection needs and provides three examples of data collection applications, it then proposes a phasing plan for the supply-side data reporting requirements proceeding. Staff proposes an orderly method and general schedule for reviewing electricity supply analysis issues, data requirements for urgent legislative directives, other electricity issues, and natural gas, petroleum and coal reporting requirements. It does not address the mechanics of data collection, storage and dissemination, which are internal to the Energy Commission and can proceed on a parallel path.

2. STRATEGIC ROLES, GOALS AND STRATEGIES

The *California Energy Commission Strategic Plan*, May 1997 (P102-97-001) explicitly recognizes electricity supply-side activities as integral to the role of the California Energy Commission. The following extracts for that Plan come from pages 9 through 12.

"Role I - Energy Policy. Make energy public policy recommendations based on relevant, objective information and analyses to the Governor, Legislature and other federal, state and local decision makers that promote affordable energy supplies, improve energy reliability and enhance health, economic well-being and environmental quality.

Goal: The Energy Commission recommends objective, analytically-based policies that encourage innovation and effective response to energy issues and needs in a timely manner.

Strategy I (1) Continuously evaluate California's energy systems, including electricity, natural gas and transportation, and recommend changes to improve all aspects of these systems.

Strategy I (2) Develop policy recommendations based on relevant public and private costs and benefits.

Strategy I (3) Retain the 10- and 20-year focus for evaluating the state's long-term energy outlook. An important role of the Energy Commission is to look beyond the short-run market horizon and assess the general trends in energy use, the degree to which energy efficiency is used, the source and security of supply, the potential for price instability, and the environmental implications of the projected level of energy use.

Strategy I (4) Maintain the state's *Energy Shortage Contingency Plan*."

"Role II - Information. Collect targeted energy data and provide policy makers, consumers and other market participants with useful, objective information and analyses based on that data.

Goal: The Energy Commission provides useful, timely and objective information and analyses concerning energy options, facts, trends and issues.

Strategy II (1) Meet energy information needs for informed government actions and to facilitate well-functioning markets.

Strategy II (2) Revise data collection regulations to protect the confidentiality of proprietary information in the newly competitive energy markets while maintaining appropriate access to information.

Strategy II (3) Develop and apply methods, analytical tools, expertise and data to evaluate entire energy systems for all forms of energy, and make the results available to policy makers and market participants.

Strategy II (4) Project future electrical load growth and, with knowledge of existing and future supply and transmission system resources and constrains, help determine whether system reliability goals are likely to be met, and recommend options to correct or improve the system before problems develop.

Strategy II (5) Provide timely and accurate information on the effect of disruptions, whether natural or manmade, to our energy supply systems.

Strategy II (6) Change the time-frame of market-sensitive analyses from a long-term focus to a two- to six-year time-frame to increase its utility and value to market participants."

"Role III - Market Programs. Provide services and programs to consumers and other market participants to improve the functioning of energy markets and to encourage the economic, efficient, effective, and environmentally responsible use of all forms of energy.

Goal. The Energy Commission's services and programs enhance the energy infrastructure and improve the function of competitive markets, resulting in more affordable energy supplies, improved reliability, and enhanced economic well-being and environmental quality.

Strategy III (4) In partnership with public and private stakeholders, take appropriate actions to help reduce market barriers and capture opportunities to facilitate market transformation of advanced electricity, fuel and transportation technologies that provide public benefits.

Strategy III (5) Use market based mechanisms to implement the Renewables Program created by AB 1890 and other legislative directives to foster renewable technologies which provide public benefits and facilitate their transition to a competitive market."

"**Role IV - Research, Development and Demonstration**. Develop and implement public interest Research Development and Demonstration (RD&D) policies and programs that encourage well-functioning energy markets through advancements in science or technology that promise to enhance California's economy or environment.

Goal. Public interest R&D policies and programs encourage a well-functioning energy market that provides environmentally sound, safe, efficient, reliable and affordable energy services and products to meet California's electricity, fuel and transportation energy needs.

Strategy IV (2) Efficiently implement and administer the public interest energy RD&D programs in electricity, fuel and transportation energy needs and conduct periodic reviews to ensure ongoing, effective stewardship of funds."

"Role V - Regulation. Perform regulatory functions as mandated by law.

Goal V (1). All energy facilities approved by the Energy Commission are designed, constructed, operated, and decommissioned in compliance with all applicable laws, ordinances, regulations, and standards in a manner that protects the public health and safety, preserves environmental quality, enhances the general welfare, and contributes to an efficient and reliable energy system and well-functioning energy market.

Strategy V (1) (1) Anticipate and seek to resolve potential energy facility licensing issues to avoid delays, reduce conflicts and increase consistency during licensing."

3. ACTIVITIES FOR ROLE I: ENERGY POLICY[1]

3.a Themes in Strategies. The themes which run through this role and strategies are: policy work shall be objective and analytic; it shall include forecasting and analyzing trends; it shall promote innovation and timely actions; it shall include consideration of private and public benefits and costs; it shall balance private and public benefits; and it shall identify emerging issues. The goal of our analytic policy work is to be a credible source of energy information, to provide independent forecasting capability, to furnish an unbiased analysis of alternatives, and to present a factual basis for policy choices.

3.b Changes in Policy Activities Over Next Four Years and Later

What issues we analyze and what data we collect changes over time, as the action options are always changing. At the beginning of this decade, we were focused on identifying how and where end-use consumption was changing with the rapid rise in commercial energy use and residential air conditioning, discovering how air pollution emitted by generation could be managed most cost-effectively, and what kinds of resource additions would bring the greatest net benefit to California. During the mid-decade, our focus changed to fostering an emerging competitive market by balancing economic, environmental, and public benefits, by targeting our air quality work on local conditions in air quality districts, and by trading the search for the 'best' resource for helping design the system rules by which private developers could absorb the risks and rewards of investing in new generation and energy efficiency. Staff has also analyzed deregulation proceedings --such as divestiture, rate reduction bonds, and the competitive transition change -- underway at the California Public Utilities Commission.

In the next few years, we are preparing for a focus on evaluating whether the new market structure is successful or whether early course corrections are necessary; whether incentives have been appropriately designed so that the market fosters new economic and environmentally sound generation, transmission, and demand-side choices; whether new products and service providers can enter the market; how a healthy balance can be achieved between the need for physical system reliability and financial management of market risks; the results of the transition period for public goods programs and recommendations concerning their future; and the continued integration of the Western regional electricity structure.

3.c.1 Proposed Activities - Electricity

I-1. Facilitate development of the electricity market during the transition period (1998 - 2001) by: providing problem-solving support to the Independent System Operator, Power Exchange, Electricity Oversight Board, the CPUC, and the FERC; monitoring prices, environmental trends, performance and participation in market to provide the legislature with an independent assessment of the effectiveness of the ISO and PX in fulfilling the goals of AB 1890; and identifying remedial actions needed to realize well-functioning markets.

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[1] Activities frequently respond to more than one role. They have been placed under a primary role, but could, in many cases, have been placed under another role with equal ease. For example, electricity price forecasts are used both to support policy-making and to provide information to the market.

Why is this a role for the Energy Commission:: In AB 1890, the Legislature set forth a state policy to support restructuring of the electricity industry in order to provide benefits to California. It is thus incumbent that state agencies involved with electricity policy and electricity programs assist the restructuring process. This will support Energy Commission role as an advisory member of the PX and ISO boards of governors, as well as advising Energy Commission decision makers on the likely efficacy of proposed energy policies. To the extent that we have knowledge, skills, and independent analytic talent which can help identify and resolve emerging problems, the Energy Commission should assist the new entities in fulfilling their responsibilities. In some ways the Energy Commission has already begun playing this role during the development of the details of implementation of electricity restructuring. We also bring a unique perspective in terms of public goods and protection of the public interest.

Changes in the next four years and later: The staged transition to a more competitive market will be largely complete in four years.

Examples of specific studies:

- Study the development and then the performance of the PX-ISO process, market clearing price and various bidding options. A key issue is whether the market's initial design will support a viable market, or whether supporting non-market contracts are necessary in a market where so many generators have similar cost structures.

- Demonstrate the value of demand side bidding as a market-based mechanism to make the system clear at prices high enough to sustain efficient existing generation and encourage new generation, so that reliability standards can be achieved without excess must-run contracts. If it is found valuable, link metering and price notification issues.

- Examine what other services and products become part of the supply-side products offered in the market. Early indications are that sale of energy as a commodity will not provide sufficient margin for competitors to survive. The market will require other services in the product package such as risk reduction, on-site energy management, fiber optic cable, combined electricity and natural gas consumption packages, and customized metering/billing. There is a potential policy concern about whether new vertical integration will create a new oligopolistic market structure with few competitive benefits.

- Assess the evolving role of municipal utilities vis a vis the ISO. The Energy Commission stated in comments to the FERC that we supported inclusion of municipal utilities in the ISO. Their joining is currently in abeyance due to: tax implications, proposed treatment of existing contracts, and negotiations over the transmission access fee.

- Provide recommendations to the ISO and PX on market power monitoring, assessment and mitigation. Both the ISO and PX have been charged by the FERC

with essential market power monitoring; and both have asked the CPUC and the Energy Commission for input.

I-2. With knowledge of existing and future supply and transmission resources and constraints, help determine whether system reliability goals are likely to be met in the near-, mid-, and long term and recommend options to correct or improve the system before problems develop. Monitor, collect data and analyze the net benefits of generation and demand options to ensure reliability. Collaborate with Independent System Operator in their reliability study requirement by AB 1890. The final analytic product to be delivered to the ISO by March 1998 will be an examination of system reliability issues and the potential for mitigation through transmission system expansion and/or generation additions. This product will include an analysis using the MAPS model of the optimum use of the Pacific DC Intertie and its impact on relieving California system constraints through the central valley. The results will be used by staff for presentations to the California ISO on the efficient use of transmission in California. Staff will also participate in the study steering team, reviewing the draft product and helping make recommendations to the ISO's governing board.

Why this is a role for the Energy Commission: AB 1890 requires the Energy Commission to assist the Independent System Operator in its June, 1998 study on reliability issues. Beyond that specific study, the Legislature has clearly identified reliability as a paramount issue of state interest in that AB 1890 departed from previous CPUC policy decisions to flag the need for system reliability. If the market system which has been established does not provide reliable power or provides it at an unacceptably high cost, the Legislature will want prompt notification and identification of potential remedies. While the ISO is concentrating on the near- and mid-term provision of reliable service, it is not a policy or oversight agency. The Energy Commission can provide forecast outlooks, screen options and examine the roles of multiple market participants. We can promote innovative solutions, match costs and benefits, and provide an objective assessment of proposals. The results of these analyses will be provided to the operational entities responsible for maintaining reliable service.

I-3. Conduct an independent assessment of real and reactive power flows in order to understand the quantities and locations of ancillary services necessary to maintain system reliability. This will involve acquiring an AC power flow model and associated data base, and training staff. FERC has not yet granted authority for market-based prices for ancillary services, and we anticipate that development of this market will be a major issue in 1998 and 1999.

Why this is a role for the Energy Commission: In the regulated system, ancillary services were provided and costed as an integrated element of overall electricity generation. While system operators were acutely aware of the need for ancillary services, they did not have to unbundle the elements to be provided individually or price them for provision via competitive markets. As the first stages of the new market unfold, California will need to design a market for ancillary services and demonstrate to FERC that this market is not

subject to market power. In order to provide an independent view of an unbundled energy, ancillary services and transmission market, the Commission will need to expand its tools repertoire by adding a power flow model. Previous modeling could use rules-of-thumb and a few sample cases for approximating power flows, because it was incumbent upon a single company to provide all services in one price. Now multiple market participants will be involved, and we must disaggregate our simulation tools as well.

I-4. Provide future trend assessments of electrical energy market clearing price. Roughly one-third of the total price paid by consumers will be the commodity price of energy, known in California as the "market clearing price". In the market place, this will be determined by the degree of competition, both in the future and real time markets. Long-term forecasts of market clearing prices will be used to estimate the viability of new entrants, the value of retiring or retrofitting aging plants, the functionality of the market itself, the cost-effectiveness of alternative energy and demand-side management, the probable demand for electricity, and the attractiveness of the California economy for new investment.

Why this is a role for the Energy Commission : Private firms will provide tailored market price forecasts, using the proprietary inputs of their clients. The Energy Commission's role is to provide a public price outlook which includes both cost-basis and bidding behavior. These will serve as a benchmark by which to compare private assessments, as a policy-planning tool for State energy programs, as an input for State business outlooks, as a source of objective information to consumers, and as an analytic tool for an independent assessment of the market. We are not yet sure that the market is designed so that competition can work effectively; there are major lingering concerns about whether must-run and ancillary service contracts will skew the energy market. These concerns are exacerbated by recent FERC decisions that may reduce the scope of the market within which must-run and must-take plant outputs are absorbed. A forecast of market clearing prices is one of our most frequently requested products, because it is an input to many decisions.

I-5. Provide future trend assessments of end-use electricity prices and their components. (see II-4 and Example #1 for a more detailed discussion)

Why this is a role for the Energy Commission : When the Legislature enacted AB 1890, it anticipated that consumers would benefit from electricity restructuring. Benefits may come from lower prices, increased services, and value-added combinations of services. Market energy prices are less than half of the total picture; to them must be added distribution, transmission, customer services, competitive transition charges and public goods charges. Trend assessments will allow us to estimate whether price benefits are occurring, since it is unclear that competitive markets will be satisfied with the rates of return allowed regulated utilities. The Commission has a broad public interest, so it is able to assimilate all the information needed to produce a comprehensive price outlook, as well as sensitivities of prices to key exogenous variables. Prices will be used by various consumer sectors to evaluate the offers which they are made by energy service providers. End-use prices are also an input into the Commission's electricity consumption forecasts. We anticipate that electricity consumption will become more price elastic over time, so that demand and supply will become more interactive.

I-6. Evaluate the net benefits of retiring existing generation and the construction of new generation in-state and out-of-state.

Why this is a role for the Energy Commission : The Energy Commission is interested in plant retirements and new construction for many reasons: whether the market is sending efficient signals, the impact on emissions from generating stations, the public benefits of use of existing transmission lines and substations in highly urbanized areas, the potential market for new technologies, the potential for new siting cases, the inter-connection of the western region, and whether costs and benefits are correctly aligned.

I-7. Identify key trends and uncertainties and assess how they might affect the emerging electricity market.

Why this is a role for the Energy Commission : Identifying emerging trends, uncertainties, and potential issues is a fundamental role set forth in the Strategic Plan. Strategy I (3) calls for the Commission to 'look beyond the short-run market horizon and assess the general trends in energy use, the degree to which energy efficiency is used, the source and security of supply, the potential for price instability, and the environmental implications of the projected level of energy use.' In addition, both proponents and opponents of various restructuring policies and protocols emphasize possibilities favorable to their position. A wide range of outcomes is possible, and the factors causing these may not be easily disentangled. To do so is essential to making effective corrective actions.

I-8. Inform and collaborate with other Western states about the operation and effectiveness of the new California market as it affects out-of-state economic and environmental issues.

Why this is a role for the Energy Commission: California is an energy consumer; even in electricity we import twenty-to-thirty percent of our power. California is also the largest economy in the West; its policies and developments have profound repercussions on the economies of its sister states, western Canada and northern Mexico. Any new policy involves inter-state issues which are best worked out through cooperative discussions. California cannot make its decisions in isolation from other western states, especially in the inter-connected electricity grid. Inter-state groups such as Western Interstate Energy Board, the Committee on Regional Electricity Cooperation, and the Western Governors Association provide vehicles to achieve coordination. Staff will represent the state as a member of transmission working groups within WRTA, WICF, the WSCC and the California ISO. With regard to products, WICF is responsible for developing a regional transmission plan for the western states by April 1998. The results of staff involvement in developing the coordinated regional transmission planning process will be realized in the 1998 western states plan.

I-9. Assess the financial implications of restructuring on: utilities' ability to collect CTC, viability of direct access, impact on consumers and on market of rate reduction bonds, futures market, derivatives, and hedging.

Why this is a role for the Energy Commission: There is great public concern over how new financial instruments such as CTC, rate reduction bonds, derivatives, and the futures market will affect the distribution of risk and rewards among market participants. While the financing of restructuring is not a principal area of interest for the Energy Commission, we see the need to keep apprised of developments and to inform ourselves about the potential risks and opportunities which will arise from the perspective of their implications for consumers and other market participants. A successful transition to a market for electricity will involve greater use of financial techniques to manage risk; so it is in California's interest for these markets to develop successfully.

I-10. Evaluate options for rural areas to benefit from restructuring; such as implementation of irrigation district CTC exemption and agricultural cooperative aggregation.

Why this is a role for the Energy Commission: AB 1890 required the Energy Commission to implement the irrigation district CTC exemption and SB 252 requires the Energy Commission to conduct a study of potential new institutional arrangements for rural counties to benefit from electricity restructuring. In both instances the Legislature was recognizing that rural and agricultural areas often have more dispersed populations, more costly distribution systems, and less discretionary resources for studying innovative institutional arrangements. Since the Legislature's goal is that restructuring shall benefit all California consumers, they have directed the state's energy policy agency to assess and support methods to bring benefits to these areas.

Changes in the new four years or later: Within three to four years, the transition period will be over for investor-owned utilities and broader competition will take place. A goal of restructuring is that competition will offer better services to all consumers. If this project is successful, arrangements will have been created so that a market niche has been created to provide targeted services to rural and agricultural areas.

I-11. Support environmental quality policy-making with analysis of the net electricity and emission benefits of alternative environmental quality program choices. Acquire knowledge of the interaction of the energy system with air emissions and water use to assist environmental regulatory agencies in removing market barriers and incorporating market-based mechanisms into their planning and rulemaking activities, when appropriate, and to assess emissions mitigation alternatives in siting cases. We should also develop policy options to improve the efficiency of energy markets by internalizing externalities. Finally, it is likely that we will need to address the interaction between criteria pollutant initiatives, those which address climate change, and the operation, reliability and market responsiveness of California's energy system.

Why this is a role for the Energy Commission: Inherent in the Commission's "balancing" mandate is the need to examine the interrelationship of energy and environmental choices. To do this effectively, we need to work with the environmental quality agencies who manage the State's air, water, toxics, and endangered species programs. To improve the efficiency of air quality regulations affecting energy facilities, we will need a variety of

products to address timely issues specific to each district, or ARB. It is most effective to approach this on two fronts -- proactively through rules being promulgated or enforced by those agencies and specifically through mitigation strategies proposed in siting cases. The CEC is unique among state/regional agencies in its knowledge and expertise in both energy and environmental fields. Staff of utilities which once had dual capabilities are no longer supported by UDCs with no generation responsibility.

I-12. Support California Air Resources Board programs through conducting emissions studies for ARB policies which affect use of electricity versus other fuel sources. For example, conduct system studies on the generation emissions associated with electric vehicles and low emission vehicles.

Why this is a role for the Energy Commission: The California Air Resources Board (CARB) relies on the Energy Commission to provide technical input into its rule-makings. Combustion of fossil fuels to produce energy and transportation is the primary source of many airborne pollutants. It would be a waste of State funds for the CARB to have to develop or contract for expertise in these areas, when the expertise already exists. In the electricity area, CARB is particularly interested in reducing mobile emissions and the role which a variety of alternative vehicles can play. The CEC provides system simulations and estimates of emissions from generation based on vehicle penetration scenarios provided by the CARB.

I-13. Provide timely and accurate information on the effect of electricity supply and transmission disruptions. Working with the ISO and the Office of Emergency Services, we are putting together a plan to coordinate electronically.

Why this is a role for the Energy Commission: The Energy Commission has a statutory role in informing the Governor on the nature, size and duration of emergency disruptions.

3.c.2 Proposed Activities: Natural Gas Supply and Price

I-14. There are seven areas in the natural gas market that will require analysis to determine impacts on the price and availability of supply for California consumption. In the next two to four years the following changes in the market will have to be reviewed and incorporated into the Staff's analysis:

- Several major new US and Canadian pipelines have been proposed. Whether these will actually be built will be determined in the next few years. Should they be built, regional natural gas flows will change and therefore, affect supply and price of natural gas available to California.

- The emerging natural gas market in northern Mexico will be dependent on the US for supply for the foreseeable future. Delivery of these supplies will be through pipelines which also deliver natural gas to California. To what extent will this

market grow and how will it impact the ability of pipelines to meet California's demand for natural gas?

- Ongoing evaluations of potential natural gas resources and proven reserves will need to be incorporated into the North American Regional Gas model (NARG) data bases. Through reevaluations of proved reserves, it has been observed these already discovered resources grow in magnitude without having to physically add new production wells. This phenomenon is not well understood and will require future evaluations to determine what kind of effects it will have on future gas supply and price.

- Regulatory changes will continue to happen at both the federal and state levels. In California, the CPUC is moving towards having the utilities utilize performance-based rates. This new concept is only now being implemented, with the purpose of providing more market sensitive rates and reducing regulatory involvement.

- Unbundling or separating various utility services is also in the process of evaluation and implementation. Pacific Gas and Electric Company is nearing the completion of a two-year process of obtaining approval to implement its Gas Accord. This would separate such utility service costs as distribution, transmission, storage and other costs so that they would be applied to just those who requested or actually used them. Southern California Gas Company is about to start a similar process.

- The California Public Utilities Commission will be shortly publishing the results of its Strategic Plan. It will outline a workplan to further deregulate the natural gas industry in California. A rulemaking investigation will follow that will eventually lead to the unbundling of natural gas utility services in a manner similar to what is occurring to the electricity utility services.

- National and state efforts to study, define and mitigate global climate changes due to emissions from the energy sector will affect domestic and international natural gas demand, supply, and price. Switching to natural gas is an effective and inexpensive method to reduce global climate change gas emissions. With California's domestic electricity generation dependent on natural gas, perturbations in the market may adversely affect California generation.

Why this is a role for the Energy Commission: In the past few years, over 33 percent of California's electricity has been generated using natural gas. In comparison to other fuels, natural gas provides a low priced fuel which is both reliable and environmentally benign. As a result, it has been the fuel of choice for electricity generation in California. On price aspects alone, it sets the marginal price that will be paid for the incremental electricity needs. It is, therefore, important that all players in the electricity market, both suppliers and consumers, have a basic understanding of where natural gas prices will be going in the near, as well as, the long term.

The Energy Commission, and others, have relied upon its Fuel Resources Office to provide a natural gas price and supply forecast for electricity generation. The Office has a well established and recognized track record for preparing unbiased and reliable forecasts. It is anticipated this role will continue well into the future.

Example #2 describes how these policy activities occasion data collection.

I- 15. Pursuant to the development of the biennial ***Fuels Report***, the Energy Commission undertakes several activities for the benefit of the natural gas industry, its consumers, and the public. The natural gas supply and price forecasts prepared in conjunction with the ***Fuels Report*** will continue to support a number of roles. These include policy analysis, providing natural gas information to industry participants, market analysis, and regulatory support.

Why this is a role for the Energy Commission: Local, regional and governmental entities will continue to need natural gas and other fuel types analysis to make policy decisions about whether to support certain energy programs as energy conservation, demand side management, alternative fuel development, air quality programs, and various social programs.

Reliable and unbiased natural gas supply and price forecast will continue to be needed by the energy market participants to assist them in making energy choices. Proposed natural gas and electricity project sponsors and financiers need information on natural gas price and supply to evaluate the economic aspects of the proposals.

Consumers may wish to have comparative energy price information to analyze such options as whether to switch to a different energy source or type, modify existing equipment, or even change site locations.

Governmental agencies may wish to analyze market trends. For instance, electricity restructuring could cause a regional shift in electricity generation. Will this have an impact on other energy markets, such as residential natural gas prices?

The Energy Commission will continue to have a regulatory role in energy. This would include developing building and appliance standards and siting new power plants. In each of these roles, the future price of energy, including natural gas, will be needed to properly prepare and complete the analysis.

3.c.3 Proposed Activities: Renewables Generation

I-16. Analyze potential competitiveness of renewables and determine the public net benefits of renewables, to assist decision makers in proposing a post-transition strategy for renewable generation.

The Energy Commission will be analyzing the competitiveness of renewable electric power producers in the energy, must-run, and ancillary services markets. This analysis must be based on a comprehensive database of the costs and market shares of a variety of conventional fuels and generation technologies as well as renewable technologies. The changes in the electricity industry imply that historical data may not be applicable to the markets developing as the industry is restructured. For example, energy producers will be priced on an hour-by-hour basis rather than the former mechanism of avoided cost. Current information is required about how well conventional, as well as renewable, technologies perform in an environment where customers have new abilities and information with which to choose among power products using various technologies and fuels, and where ancillary service markets are split from energy markets.

The Energy Commission is beginning this effort with a DOE funded project on non-utility suppliers that examines the potential competitiveness of non-utility suppliers under alternative scenarios. The project includes developing a methodology for assessing

renewable competitiveness and creates a database that combines information about a variety of technologies over time. The database contains information on capacity, fuel duration (or survival) of the renewable technologies, and expectations of survivability given costs and institutional structure. When completed, the project will aid policy makers and stakeholders by providing a detailed data bank along with an assessment of renewable competitiveness and of the amount of and type of public support, if any, appropriate to capture the net benefits of renewable technologies.

Related work on the public net benefits of a variety of renewable and conventional technologies will assist decision makers in proposing post-transition strategies for renewable generation. Identifying and working to capture the public as well as the private costs and benefits of electricity generation from any fuel or technology will lead to prices in the market that will enable more efficient choices by consumers, investors, and other market players. The success of a 'green market' in reflecting consumers' choices about relative environmental impacts, and the success of market-based environmental regulations, such as the Regional Clean Air Incentives Market (RECLAIM) in the Los Angeles area will be taken into account as this work is developed.

An initial project will use econometric methods to quantify the sources and magnitudes of risk in portfolios of electricity generation (fuels and technology), both current and prospective. The project will assess a variety of methods, including setting standards for resource diversity, that can be used in order to mitigate the adverse private and societal effects of evolving risks. The project will develop a modular risk-assessment system, and associated data, to pinpoint the risk management tools that work best in California's evolving competitive electricity industry.

4. ACTIVITIES FOR ROLE II: INFORMATION FOR WELL-FUNCTIONING MARKETS

4.a Themes in Role II strategies: These strategies call for: useful, timely, objective, and targeted data which is collected and distributed efficiently with a goal of facilitating decision-making by policy-makers, consumers and other market participants.

4.b Why This Is a Role for the Energy Commission

Information is provided by many institutions. On an world-wide basis, the International Energy Agency attempts to give an overall picture of world and regional trends. At the national level, the Energy Information Agency published data on generation, consumption and price with a focus on its regional break-outs, but with substantial data at the state level. Regionally, organizations such as the Western Systems Coordinating Council publish information on its members which can be aggregated in many different ways. The Energy Commission specializes in California data, building on the expertise of WSCC and EIA for other regional components. Below the state level, firms and localities also amass and disseminate information. All of these agencies collect data because they are charged with answering policy questions or informing market participants. The level of precision changes depending on the question. For example, EIA associates coal-based electricity with the state in which it is produced. We, on the other hand, associate it with California if its owner is a California-based utility. For EIA, what matters most is that they get an accurate total picture counting generation once and only once. For California, what matters is that we get an accurate picture of the sources and uses of our fuel, even if it comes across state lines. Many of these agencies use each other's data and only collect new data when their questions cannot be answered using a higher or lower level of aggregation.

One might ask why the market shouldn't be left to provide information as a private commodity. There are compelling reasons why this will not be a successful strategy for all market participants. For one thing, competitors cannot share information without violating anti-trust restrictions; another is that investment decisions are episodic and cyclical so that it is not cost-effective for many firms to maintain an adequate information base. Also, markets should not be expected to collect data relevant to externalities or public goods. The utility divestiture process is proceeding very rapidly and fragmenting ownership/knowledge of existing generating facilities. Another reason is that no single market participant has complete data; they want to invest in information of relevance to their particular niche. A final reason is that disaggregated information is business sensitive and must be protected by a formal system of confidentiality if it is to be shared and aggregated.

We are also concerned that in the emerging market there is unequal access to information. The former monopolies have a head start compared to their competitors and to their consumers. Consumers have not had significant choices in the past, so they need an independent and objective source of information to build their own knowledge base and to compare the inducements offered by energy service providers.

Lastly, information is the fundamental core upon which policy choices rest. Laws, court rulings and government regulations create the context within which the private market operates. An accurate representation of the market is essential for policy-makers to determine whether intervention is desirable or not desirable, and to determine whether their policy intentions are being fulfilled. Our goal is to have a simplified, streamlined information system useful to market players and government.

4.c Changes in Information Activities Over Next Four Years and Later

Information is key to a well-functioning market because it supports efficient market conditions. We regularly supply data to research firms, consultants, banks, cities and counties, utilities, and allied businesses. The most common supply-side requests have been:

- physical characterizations of the whole system or local generation
- emission factors or emissions from the system or local generation
- forecasts of average prices and near-term marginal costs
- historic and trends for generation fuel source and ownership
- advice on how to analyze an issue or solve a modeling problem
- price and availability of out-of-state power
- miscellaneous facts associated with current regulations, laws or industry trends

We envision that many of these requests will be made again in future years, because they are building blocks upon which specialized studies can be made. Of course, changes will arise from the new market structure. For example, previously a single price for each sector was desired; now parties will request separate prices for the various components of their bill. Since only some of the new market is competitive, consumers will want to know how much of their bill they can influence by the choices they make. Another example is the role in must-run contracts and ancillary services in covering the total costs of generation. Previously, ancillary and must-run services were not priced separately. Thirdly, we anticipate an increase in interest from out-of-state investors and regulators who will now need to think about potential California sales in a new and detailed way.

4.d.1 Proposed Activities - Electricity

II-1. Provide basic electricity physical and financial characteristics:

- ISO: market characteristics, market power, price patterns, supply/demand forecasts, and mid-term generation and transmission scenarios
- Electricity Oversight Board: five-year demand/supply balance, system reliability and vulnerabilities, and system efficiency opportunities
- Market capital investment support: supply/demand balance, system marginal production costs, benchmark price outlooks, and relative risks of potential changes in physical and economic trends
- Consumers: price and risk, resource mix, fuel dependency, and environmental characteristics of competing suppliers
- Air regulators: dispatch and emission estimates and design of market-based mechanisms

Why this is a role for the Energy Commission: No single entity has oversight responsibility and information needs for the whole electricity market, except the Energy Commission. The ISO and Electricity Oversight Board do not have authority over publicly-owned utilities. Even in the integrated/regulated utility arena, parties make use of CEC-based information products describing the industry as a whole.

II-2. Provide accurate information on current and historical electricity resource mix and fuel dependency. Collection, processing and dissemination of 'net system power' generation/fuel source information is necessary to implement SB 1305. In addition to the specific need to compute annual net system power -- subtracting specific purchases -- we anticipate that the market will want a complete picture of the changing roles of in-state and out-of-state generation and generation ownership.

Why this is a role for the Energy Commission: SB 1305 establishes a program under which entities offering electric services discloses accurate, reliable and simple-to-understand information on the generation attributes of the electricity they propose to sell. Consumers need an objective benchmark to compare what they are being offered to what they would get without product discrimination. By law, the Energy Commission is required to provide that benchmark.

II-3. Provide information about specific purchases and energy service providers as requested by SB 1305.

In SB 1305, enacted in 1997, the Legislature addressed the need for reliable, accurate, and timely information regarding fuel sources for electric generation offered for retail sale in California. This law requires a variety of disclosures of generation and fuel type information to consumers and to system operators and the Energy Commission, setting up a system intended to have sufficient information to verify specific claims made to consumers about the fuel sources of their electricity products. The law also gives the Energy Commission the responsibility of developing guidelines for these disclosures and of providing an annual report about the disclosures involving specific claims. This report will be provided to the California Public Utilities Commission, the Legislature, and made available to electricity consumers and other market actors, to help facilitate the market.

SB 1305 requires, in part, that ESPs that make claims to consumers about fuel sources must disclose these sources as specific purchases, and provide to the Energy commission annually (for the previous calendar year): 1) monthly generation purchased information, 2) monthly electricity consumed or sold information, and 3) information that was disclosed to consumers. This disclosure is intended to connect generation information about specific generators to consumption information by consumers of specific electricity products (through a financial contract trail, not a physical path). This is a twist on the collection of generation information - connecting specific generation to specific products - that has not previously been a responsibility of the Energy Commission. The intent of this task is verification that claims being made to consumers about the fuel sources of their products are accurate within reason; the purpose of this verification is to facilitate the development of an electricity market where consumers can choose electricity products based in part on the fuel source mixes of the products, with some assurance that their choice is based in fact.

Why this is a role for the Energy Commission: The Energy Commission will use this information to compile a report to the CPUC and the Legislature, available to other market participants, that will compare claims made to consumers to actual generation, providing the market with an annual source of consistent information with which to compare among the ESPs subject to the report and to verify in general to consumers the fuel sources used to generate the variety of electricity products being offered in the market. To be most useful to the market, this report is intended to be compiled and made available as soon as feasible

after the Energy Commission receives the necessary generation and consumption information, but no later than October 15, 1999 and annually thereafter.

II-4. Provide accurate information on historic electricity prices and their components; and forecast future wholesale and retail electricity price scenarios. This will involve assessing the factors which drive the market clearing price and construction of a model which provides a reasonable forecast of how the market clearing price is likely to change given changes in exogenous variables. Such information will provide benchmarks to support market players in their capital investment decisions. (see Example #1)

II-5. Provide information on the cost of market entry, especially regarding the market clearing price and emission trading credits.

4.d.2 Proposed Activities: Air Emissions-Related

II-6. Participate in Air Quality Regulator Planning and Rulemaking
Air quality is directly or indirectly affected by emissions of criteria and noncriteria pollutants and greenhouse gases from energy activities. Considerable change is already underway to shift from utility-dominated generation to unregulated generation. Further changes can be expected as a result of national and worldwide focus on global climate change.

Why is this a role for the Energy Commission.: Coordination among the Energy Commission, Air Resources Board and the various local air pollution control districts can improve our understanding of the energy industry's effects for air quality plans and can improve the design of air quality regulations. The current development of regional energy markets and introduction of new market mechanisms in the electricity industry could change historical patterns of generation and subsequently emissions from generation. Changes in emission patterns could have an impact on current efforts to attain air quality standards. The significant changes occurring in the electricity industry, and the uncertainty surrounding them, create new challenges for air quality regulators who must make assumptions or predictions about future economic activity of this sector.

Changes in the Next Four Years or Later: Air Quality Management Plans and the State Implementation Plan will be updated over the next five years. District air pollutant emission reduction rules governing electricity generation will be modified in response to changes in the electricity industry.

Proposed Activities:

- Provide useful generation estimates to air quality planners which incorporate key uncertainties
    - Bay area utility boiler NO_x emission reduction rule
    - AQMD and state implementation plan updates
- Evaluate impacts of alternative emission reduction mechanisms
    - CARB electric vehicle, low and ultra low emission vehicle studies

    - Federal emission credit trading rules
- Evaluate impact of alternative generation technologies
    - Distributed energy resources
    - Emerging technologies

II-7. Assess Trends in Electricity Generation Emissions

Staff collects, analyzes, and disseminates electricity generation and related air pollutant emissions data. Activities associated with generation related air pollutant emissions include the evaluation of proposed power plants during the certification process, including the contribution of existing and proposed electricity generation to local air pollutant emissions inventories and air quality conditions. Accurate and current information about the ambient air quality, existing inventory, and specifically, air pollutant emissions from existing generation, provide for timely review of proposed power plants.

Why this is a role for the Energy Commission: The environmental impact of energy production is one of many attributes which the Energy Commission must consider and balance when developing and evaluating energy policy alternatives. This effort is assisted by identifying emission trends among the complex interactions of energy and emissions market forces and regulatory actions.

Changes in the Next four Years and Later: As the electricity industry responds to changes in regulatory and market mechanisms over the next five to ten years, changes in historical patterns of emissions may occur. These changes will prompt air quality regulators to modify the existing regulatory protections to ensure progress in attainment of air quality standards. The Energy Commission needs to understand what emissions trends may result from this complex interaction and what may be the environmental impacts.

II-8. Market-Based Environmental Programs

Activities associated with generation air pollutant emissions include efforts to foster and encourage the development of market-based air pollutant emission trading and environmental programs. Market programs, which may include aspects of traditional, "directive" approaches, may provide more efficient mechanisms to improve air quality. These programs may be affected by electricity supply and demand, but are not limited to generation air emissions as air districts move to create broader universes for air emissions trading and emission reduction strategies.

II-9. Global Climate Change

This project coordinates the development of inventory methodologies with US EPA and collects, analyzes, and disseminates global climate change gases emissions data. Activities associated with global climate change gases include preparation of inventories, identification and evaluation of reduction strategies, and responses to data requests from the public and policy and decision makers. In addition to working with US EPA, key organizations include the International Coalition for Local Environmental Initiatives, the Rocky Mountain Institute and various local governments throughout California.

II-10. Evaluation of Restructuring

Activities associated with generation air emissions include providing an assessment of restructuring as it is implemented. A specific task is contained in SB 1305, the Energy Commission is to provide a report (an Electricity Generation Emissions Report) to the legislature on the air emission effects of restructuring. Broader questions may be raised as restructuring is fully implemented in the next four years.

4.d.3 Proposed Activities: Transmission Facilities Evaluation

II-11. CEC MAPS Ten-Year Data Base and Transmission System Constraints Map

This activity will be the development of a ten-year data base for the western region (by January 1998) which will serve as the input file for future MAPS analyses of California and interregional issues such as system congestion, reliability and transmission additions. The current data base is a one year 1995 data base representing the best available WSCC data for GE MAPS at that time. The WSCC ten year data base will allow consideration of generation additions and transmission expansion beyond 1995 for California and the western states. Based on the new MAPS ten year database, staff will produce a revised transmission system constraints map. This product will provide a more detailed depiction of system constraints in California.

II-12. Optimal Project Locations Study

This product will be a system map and report on the optimum locations within the transmission system to locate additional generation (by June 1998). The product will be based on data such as area loss factors, voltage support locations, spinning reserve needs and system constraints. The product will be useful to both staff and developers in seeing from a system operations perspective where additional generation is beneficial. This system perspective could be overlaid with an environmental assessment to determine the nexus between system performance and environmental impact.

II-13. Assessment of Transmission Corridor Needs

This activity will evaluate the adequacy of existing corridors to serve future transmission needs (by March 1998). Existing corridors in California will be compiled on a map and compared with the latest WRTA transmission plan for the western states. In addition, system constraints in California and transmission options for relieving the constraints will be identified and compared with the available corridors. Based on these comparisons staff will estimate the adequacy of existing corridors to serve future needs.

II-14. Participation in the ISO Maintenance Task Force (Sec 348)

The final product to be delivered to the ISO (by December 1997) as a result of this activity will be an identification of each of the transmission owners' maintenance practices for their transmission facilities along with performance measures and targets.

II-15. Review of California Transmission Projects in Regional Plan

As part of the planning process for the 1998 plan, staff will conduct a review of all California transmission projects included in the plan (by March 1998). The review will address any major environmental issues and any issues related to local agency jurisdiction. Results of staff review will be made available to the participants in the planning process.

4.d.4 Proposed Activities: Facilities Siting, Mapping and Environmental Protection

II-16. The Warren-Alquist Act directs the Energy Commission to develop and maintain information on California's major energy facilities. Specifically, Public Resources Code section 25616 directs the Energy Commission to provide technical assistance to local governments and agencies regarding the siting and permitting of energy production and transmission facilities. In addition, Public Resources Code section 25305 (h) requires the Energy Commission to produce a list, including maps, of existing electrical power generating sites.

These mandates have resulted in the production of power plant maps, electric utility service area maps, electric transmission facilities maps, and a current effort to produce a map of natural gas pipelines in California. These maps have served the needs of local agencies as well as project developers, staff, and the public.

Staff envisions a continuing role for these efforts. A comprehensive energy facilities data base is essential to meet this strategy, to analyze trends in California's energy sector, and to address expected supply-side requests.

Staff envisions extending these efforts through application of Geographic Information System (GIS) techniques. These will allow various model outputs, at one level, and detailed subject-area maps, at another, to be linked. For the model outputs, this will give staff a tool to quickly answer geographically related questions such as: what powerplants are located south of key constrained transmission lines such as Path 15? How many power plants are in the South Coast Air basin and who owns them?

5. ACTIVITIES FOR ROLE III: MARKET PROGRAMS

5.a Themes Market Program Strategies: These strategies call for services to encourage economic, efficient, effective and environmentally responsible use of energy.

5.b Proposed Activities

III-1. Provide electricity system-based assessments for new. Emerging technologies include distributed generation technologies and advanced combustion turbines and combined cycles. These can affect the environmental impacts of generation and system reliability.

When new generation technologies are being considered for commercialization, they need to be evaluated in the context of the integrated generation/transmission system and in competition with already commercial technologies. As the new market evolves, new generation technologies may serve more of a niche market for ancillary services, local load support, or demand-fluctuation reduction.

III-2. Societal Cost Evaluation of Public Interest Energy Programs

The Energy Commission must collect information about the relative performance of and costs of conventional and renewable technologies in the electricity marketplace in order to perform policy analysis concerning the future competitiveness of renewables in the evolving electricity marketplace, along with assessing the public net benefits of renewables and other generation technologies. Data is needed about the market performance (market share, dispatch schedule, etc.) of all technologies competing in the energy, must-run, and ancillary services markets. Data about the costs of these technologies, both public and private, will help provide information about the prospects of new entrants to the market. This data will eventually help determine the market response to environmental impacts, risk and diversity, and help policy makers examine the need for market influencing measures to achieve greater social benefits.

Why this is a role for the Energy Commission: Information about the private and societal costs and benefits of Public Interest Energy programs and alternative actions is used to support both the Commission's Energy Policy and Market Program roles. Throughout the transition period a ratepayer surcharge will subsidize Public Interest Energy Programs which can have a direct or indirect effect on generation air emissions (i.e., demand side management, generation from renewable energy sources, and research, development and deployment of more efficient, new generation and emission controls). The decision to impose the surcharge was based on the presumption that current or future societal benefits of the Public Interest Energy programs do or would outweigh the societal costs of the surcharge. As the end of the transition period and current surcharge approaches, an estimate of societal benefits of the Public Interest Energy programs will be needed to assess the continued need for, appropriate form of, or magnitude of continued public subsidy of individual Public Interest Energy programs.

Changes in the Next Four Years and Later: During the transition period, societal costs of Public Interest Energy alternatives should be assessed to ensure the alternatives providing the greatest benefit are being pursued. Before the end of the transition period, alternatives to continuing the Public Interest Energy programs should be assessed. This assessment will support the decision to discontinue, to continue as is, or to modify individual Public Interest Energy programs.

Proposed Activities:

- Full fuel cycle emission assessment of existing Public Interest Energy programs and alternative methods of achieving emission reductions
- Societal cost assessment of existing Public Interest Energy programs and alternative methods of achieving the benefits delivered by Public Interest Energy programs

III-3. Data needs and expectations for SB 90 renewable generators

The Energy Commission is implementing a near-term transitional program to foster renewable technologies which provide public benefits and facilitate their transition to a competitive market. This program was initiated by AB 1890, which required the Commission to develop recommendations for the program and provided approximately $540 million in funding over the four years 1998-2001 as part of the public benefits charge authorized under restructuring. A later bill, SB-90, enacted recommendations from a Commission policy report in March 1997 into state law. The Commission has been developing guidelines to implement the renewables program, and will be adopting these guidelines in early 1998.

The Commission's renewables program provides production incentives of up to 1.5 cents per kilowatt-hour for eligible renewable generation in California. The Commission is expecting to receive information about generation on a monthly basis in a form sufficiently timely and verifiable to pay production incentives monthly, with about a two month lag. While existing utilities, other energy service providers, system operators, and other regulators are potential sources of the information, for this program the Commission is requiring a monthly invoice directly from the participating generators in order to make timely production incentive payments and to provide a clear legal basis for those payments, as well as for program tracking and auditing purposes.

To participate in the program, renewable generators must provide monthly generation information to the Commission, along with a copy of a third-party invoice verifying that the energy was produced and sold to service provider or transmitted over the grid. Participating existing renewable generators must provide generation information monthly beginning with January, 1998 generation (or the first month of participation), and will no longer be required to provide the generation information after December of 2001. Participating new renewable generators must provide generation information monthly beginning with their on-line date or first month of participation, and will provide the data for at most five years from that date.

Monthly information about renewable generation may also come from energy service providers that are participating in the customer credit part of the program. ESPs that participate will be expected to provide monthly information about their purchases of eligible renewable generation, along with information about the sale of this generation to their customers.

In addition to the purpose of making payments to participating renewable generators, the Commission will use the generation data provided to help fulfill the responsibility of reporting to the Legislature about the results of the renewables program on a periodic basis. The Commission is required to provide quarterly reports to the Legislature about the funds covered in the renewables program (payments to and from the accounts), and a report every two years (starting in 2000), describing the status, progress, and results of the program. In this report, the generation information provided on a monthly basis, along with other generation information provided through the Commission's data collection authority, will be used to examine how well the program is working towards the goals of fostering renewable technologies and facilitating their transition to a competitive market.

To fulfill reporting requirements and analysis responsibilities, the Commission will need the equivalent data about renewable generators for some period of time after incentive payments cease, so that post-transition success of the program can be examined. This data, however, may not be needed on a verifiable monthly basis, as it was during the program.

6. ACTIVITIES FOR ROLE IV: RD&D AND ROLE V: REGULATION

6.a Themes in Strategies for RD&D: The themes for this role are public involvement, public interest energy research as opposed to private sector interests, technology transfer and a reasonable probability of yielding public benefits in view of the risks, time-frames and costs.

6.b Proposed Activities for RD&D

These activities are the subset of Research, Development and Demonstration which apply to transmission and environmental issues relevant to electricity generation.

IV-1. Transmission R&D Activities

- This product will be an annual update (by January 1998) of the developmental status, cost, and deployment issues associated with each of the transmission and distribution technologies identified in the Transmission Technologies Chapter of the ETSR.

- Based on work performed for the ETSR on transmission R&D technologies, staff will participate in the CPUC review of IOU transmission and distribution projects proposed for funding through the AB 1890 regulated R&D account.

- Based on work performed for the ETSR on transmission R&D technologies, staff will participate in the CEC proceedings on public interest R&D expenditures and identify technologies for potential funding that enhance system reliability.

IV-3. Defense Conversion Project Status Report:

This product will document the progress to date on the development of a superconducting current limiter being partially funded by the CEC (by May 1998). The results of this work will be presented by staff in the Transmission R&D Technologies Status Report.

IV-4. Technology Development - Emissions Element

Activities include the evaluation of existing generation technologies, emission reduction technologies, and emerging large and distributed generation technologies. Evaluations will be used by policy and decision makers regarding targeting of R&D funds, providing technology incentives, and/or remove barriers to the deployment of cleaner, more efficient generation and air emission reduction technologies. Evaluations will address potential effects of emerging technologies on electricity supply and demand.

IV-6. Public Interest Energy Research Program - Environmental Element

Implement the environmental focus of the Public Interest Energy Research Program. With the help of representatives from regulatory agencies, public and private interest groups, and academic organizations, we are identifying the environmental issues associated with energy development, production and use. These environmental issues will be included in the PIER Program's First General Solicitation RFP to be released in December 1997. Our input will guide potential PIER Program research participants to the issues needing public interest research to help identify possible solutions. As the research is funded for the next 4+ years, staff will evaluate all environmental focus research proposals and manage the research grants. Ultimately, the goal is to apply the PIER Program environmental research results to help lessen, and possibly solve, environmental concerns associated with energy development and use.

6.c Themes in Regulatory Strategies: The themes for this role are efficient management of the energy facility licensing program, so that licensed facilities are safe, reliable, environmentally acceptable and contribute to a well-functioning market.

6.d Proposed Activities

V-1. California Transmission Facility Operational Data Base:

This activity is the development of the detailed California power flow input data base (by January 1998) which is needed for staff's evaluation of transmission issues on siting cases. In the past, staff has relied on an applicant's AFC filing to provide the data necessary to evaluate the issues. This data base will allow staff to prepare for anticipated projects in advance and understand the reliability issues, constraints and alternatives associated with these projects. This data will also be useful to developers and other interested parties who have a need to know the issues associated with planned projects.

V-2. Compliance Monitoring Program

The Compliance Monitoring Program maintains a data base for all energy facilities certified or exempted by the Energy Commission. Upon certification or exemption, compliance Program staff enter project description and other project-related data into an Access database called the Compliance Tracking Program. In addition to this static project information, program staff also enter specific requirements form our conditions of certification into the database, and over time, data about submittals received, or other actions which serve as verification of compliance. Presently, all Compliance Tracking Program data is used to provide information on the status of one or more condition's compliance, dates of upcoming or past project events, or a wide range of project description data (size, location, owner, legislative district, etc.) In addition, this program produces an assessment of the effectiveness of mitigation measures required of applicants to ensure their appropriateness for future siting cases.

V-3. Facilities Siting Information

The Commission's siting program has many information gathering and disseminating activities that are associated with the Commission's regulatory role of permitting and monitoring energy facilities. The information gathering activities include ongoing collection of permitting intelligence about energy facility projects outside the Commission's jurisdiction. This information is maintained in the division's power plant data base. Other permitting intelligence is obtained from discussions with potential power plant developers that inquire about our jurisdiction and permitting process. Records of conversation are kept in a siting inquiry file. When there is a question about jurisdiction, a questionnaire is used to obtain information to base a decision on net generating capacity. A division file is maintained on all jurisdictional investigations. During a regulatory proceeding, staff obtain environmental, socioeconomic and engineering information from applicants and agencies for use in project analysis. Information is then disseminated for public review in the form of a staff assessment. Information dissemination also occurs via the Commission's Internet homepage where siting process and project-specific information is maintained.

7. APPROACH TO ANALYZING FUTURE DATA NEEDS

In the earlier portions of this paper, we started by stating the **goals and strategies** of the Strategic Plan that directly imply a data gathering/use/dissemination effort. Then, we suggested specific **activities** the Energy Commission can undertake to achieve the goals and strategies. Once activities have been identified, discussed in a public forum and ratified by Commissioners, the data needs process will move to a second phase of determining the following, more specific, data issues:

- **Level of Precision**--a level of effort or accuracy at which an activity is done. Options ought imply a specific *audience* and *purpose.*
- **Data requirements** –What data must you have to do an activity at a specified level of precision?
- **Sources of data -** Who has the needed data, either the original provider or someone else who's already collected it? What sources of data are potential options from which the Energy Commission can acquire the data necessary to complete the identified activities? If the activities can be accomplished at different levels of precision, identify how the data source options differ among the levels of precision.
- **Mechanism of data collection**—How should we get the data? What mechanism should be employed to acquire the necessary data from each potential data source option (e.g., invoke current, or issue revised or new Energy Commission QFER/CFM regulations; issue ad hoc Energy Commission data requests; negotiate interagency data sharing, propose other new regulations or statutes, etc.?)
- **Availability and timeliness** concerns for each option—are the data available at reasonable resource cost and in a timely manner?
- **Confidentiality concerns and constraints**—What requirements do parties have to go through to get, use and disseminate the data, and what limits are imposed on the public review of government decisions based on the data? What are the confidentiality concerns and constraints (on data collection, data use in analysis, and data dissemination) associated with each data source option and mechanism for acquiring data? Are there changes to regulations which would mitigate the concern or constraint?
- **Balancing—**How do we weigh the conflicting attributes of need, protection, timeliness, cost-effectiveness and efficiency?

In the sections which follow we give three examples of how this approach would be applied to translate from activities to specific data requirements. The first example covers benchmark price outlooks where the data needs are well-known, but the sources are changing. The second covers natural gas price and supply forecasts, where data needs and sources are well-established. The third covers a specific air quality rule making where the contents of the rule are not yet known, so data needs cannot be specified in advance.

7. a Example #1: Using Staff's Approach to Analyzing Future Data Needs Benchmark Price Outlooks

To understand how we would arrive at specific data collection requirements, let us take an example: benchmark price outlooks.

Goal: The Energy Commission provides useful, timely and objective information and analyses concerning energy options, facts, trends and issues.

Strategy II (1) Meet energy information needs for informed government actions and to facilitate well-functioning markets.

Activity II-3: Provide accurate information on historical electricity prices and their components; and forecast future wholesale and retail electricity price scenarios.

Level of precision: There are four interrelated products to be estimated: market-clearing prices, ancillary services prices, regulated transmission and distribution prices, and the retail price of electricity. Each of the four products can be forecasted with varying levels of precision. Market-clearing prices can be estimated by transmission node, by region, or on a statewide average basis. Ancillary services prices can be estimated on a regional or statewide basis. Regulated transmission and distribution prices can be estimated either by detailed analysis of UDC costs or using less sophisticated trend analysis[2]. Retail electricity prices result from adding the market-clearing prices, ancillary services prices and the regulated transmission and distribution prices.

Historical wholesale and retail prices could also be collected from both confidential and public sources. Table 1 shows the different products with the expected audience and purposes. Based on recent experience, we expect that our audience will include both private parties and state and federal government agencies.

[2] In a type of trend analysis, the forecast is based on historical data and the trend of recent historical prices. The forecast can also be projected based on the forecast of another variable, natural gas prices, for example.

Table 1 Products with Expected Audience and Purposes			
Products	**Options**	**Audience**	**Purposes**
Market-clearing price	Nodal Regional and Statewide	ESPs, generators, wholesale and retail customers, government agencies, financial institutions	Supply forecasted prices to enable participants to make decisions about future purchases, future sales, energy contract negotiations, cost-effectiveness of DSM, potential profitability of new generation, or lending policies.
Ancillary services price - must-run, reliability/voltage support	Regional Statewide	ESPs, generators, wholesale and retail customers, government agencies, financial institutions	Supply forecasted prices to enable participants to make decisions about future purchases, future sales, energy contract negotiations, cost-effectiveness of DSM, potential profitability of new generation, or lending policies.
Regulated price - transmission and distribution	Detailed forecast analysis Trend analysis	ESPs, retail customers, government agencies, financial institutions	Supply forecasted prices to enable participants to make decisions about future purchases, future sales, cost-effectiveness of DSM, energy contract negotiations.
Retail price - by customer class	Detailed forecast analysis Trend analysis	ESPs, retail customers, government agencies, financial institutions	Supply forecasted prices to enable participants to make decisions about future purchases, future sales, cost-effectiveness of DSM, energy contract negotiations.

Data requirements:

The data requirements for estimating market-clearing and ancillary services prices are the most extensive. These data include detailed operating characteristics of existing power plants, contract terms of power purchases, capital and operating costs of potential new entrants into the electricity market, demand characteristics by transmission zone or region, and characteristics of the transmission system. In order to increase the precision of estimates of market-clearing and ancillary services prices, more detailed demand data by transmission zones or regions are required. The data needed are listed below:

Specific power plant unit data for in- and out-of-state units

Name of power plant
Date installed (Month/Year)
Estimated retirement date
Ownership by percent
Unit type: Nuclear, Coal, Geothermal, Combined Cycle, Steam, CT, etc.
Fuel used: Nuclear, Coal, Geothermal steam, oil, natural gas, etc.
Cost of fuel
Name plate capacity (MW)
Dependable capacity (MW) by hour, month and year
Location: county, air basin, water region, PX Zone
Thermal units: capacity (MW) by block: 25, 50, 80 & 100%
Thermal units: corresponding average heat rate (Btu/kWh) by same blocks, as above:
Equivalent Forced Outage Rate (EFOR) - single value or by block corresponding to above
Planned Outage Schedule or Planned Outage Hours (POH)
Ramprate (MW/hour)
Cold start-up hours (hours)
Cold start-up cost (Millions of Btu/start)
Warm start-up hours (hours)
Warm start-up cost (Millions of Btu/start)
Minimum-up time (hours)
Variable O&M ($/MWh)
Fixed O&M ($/kW)
For hydro units:

- run-of river capacity (MW) - by hour, month and year
- Total hydroelectric generating capacity (MW) - by hour, month and year
- Total hydroelectric generating energy (GWh) - by hour, month and year

Pump-storage units - provide monthly values if applicable:

- Generating capacity (MW)
- Pumping capacity (MW)
- Efficiency of pump-storage (%)
- Pump-storage reservoir size (GWh)
- Pump-storage inflow (GWh)
- Identify quantities not available for optimization process (GWh)
- Confirm that generating units count toward commitment and spinning reserve

Must-run status
For thermal units: emission rates by pollutant
Contract terms of power purchases or exchanges
Capital cost

- Instant - current or constant dollars
- Installed - current or constant dollars
- Escalation rate of costs - inflation

Discount rate
Economic carrying charge.
Levelized fixed charge rate
Plant life
Cost of capital
Other financial parameters as applicable

Require peak demand (monthly), energy and load shape, demand bids, quantities and prices, and transmission representation for each of the following 14 demand areas. The

transmission representation requires developing an equivalent circuit (by the Engineering Office) that is used for the UPLAN model and equivalent transport transmission for the Elfin model for each of the delineated 14 demand areas.

Northern California

San Francisco (ISO Zone 1)
Humboldt (ISO Zone 2)
PG&E ISO Zone 3
SMUD
No. California Others: Redding, MID, TID, NCPA, Santa Clara

Southern California

PG&E ISO Zone 4
Southern California Edison (Zone 4)
LADWP and CDWR (Zone 4)
SDG&E (Zone 4)
Southern California Others

Out-of-State

Northwest Power Pool
Rocky Mountain
Arizona and New Mexico
Nevada

For a high level of precision in estimates of regulated transmission and distribution prices, all the data specified in Table 2 are needed. This information includes data from historical cash flow, income or balance sheet statements. A forecast of sales to ultimate customers would also be needed. To use trend analysis to estimate regulated prices, historical transmission and distribution price data are needed.

Table 2 Data Requirements			
Products	**Options**	**Data Requirements**	**Sources**
Market-clearing price	Nodal Regional and Statewide	See Attachment A (similar for all options)	Power plant owner
Ancillary services price - must-run, reliability/voltage support	Regional Statewide	See Attachment A (similar for all options)	Power Plant owner, ISO
Regulated price - transmission and distribution	Detailed forecast analysis Trend analysis	Revenues by source Expenses by type Historical and forecast sales to ultimate consumers Assets by type Liabilities by type Plant specific capitalization Depreciation by type of plant (both book and tax) Capitalization ratios Federal and State tax liabilities Capital expenditures Historical rates (utility, state and nationally)	Utility annual reports, Utility SEC filings, Utility CPUC filings, FERC Form No. 1, EIA Form 412
Retail price - by customer class	Detailed forecast analysis Trend analysis	Same as above	Same as above

Sources of Data

The primary sources of data needed for the estimation of market-clearing and ancillary services prices are the owners of the power plants or the ISO. At this time there are no other sources of the detailed data required. The utility distribution companies (UDCs) would be the source of historical data for demand forecasts by transmission zone. The Demand Analysis Office would supply the transmission zone or regional demand forecasts.

The data sources for estimating regulated transmission and distribution prices is available from public sources. These are (or will be) UDC annual reports, UDC SEC filings, CPUC filings, annual FERC Form No. 1 reports, and Energy Information Administration (EIA) filings. At the lower level of precision, the same data sources would be required, though there would be less manipulation of data.

Mechanism of data collection

Much of the data needed for estimation of market-clearing and ancillary services prices will be considered confidential and proprietary as the competitive generation market develops.

Collection of this data will require Energy Commission regulations concerning data reporting requirements for generators, both in- and out-of-state, and the confidentiality of data provided. This will also require cooperation with other government agencies as some data may be collected and provided by the ISO or the federal government.

The primary data sources for estimating regulated transmission and distribution prices are publicly available and do not require the Energy Commission to institute new rules or regulations concerning their collection. Data can be requested directly from the UDC, the SEC, the FERC or the EIA. We can also collect data by being involved in general rate cases or other proceedings at the CPUC.

Availability and timeliness

Much of the data needed for estimating market-clearing and ancillary services prices have been collected from the investor owned utilities in the past. As the generation market becomes competitive and the IOUs divest generation assets, collection of this data will become increasingly difficult. If the Commission can address the confidentiality needs of the power plant owners, the data can continue to be collected.

The data needed for estimation of regulated and retail prices are available within months after the end of each calendar year or quarter. In some cases data is available on a monthly basis.

Confidentiality Concerns and Constraints

Confidentiality concerns will arise from the collection and dissemination of power plant data. The Energy Commission may have to issue confidentiality rules limiting the dissemination of such data outside the Commission. Commission employees may be bound by confidentiality agreements in order to alleviate power plant owners' concerns about competitors' access to such data.

There are no major confidentiality concerns about data needed for estimating transmission and distribution prices. This data is public and can be collected from the UDC, the SEC, the CPUC, the FERC or the EIA. A minor problem is that manipulation of some data will be necessary since the format of the data is not determined by our needs, but by the needs of the particular parties to which the data is distributed.

Balancing

For regulated and retail prices, balancing of need, data protection, timeliness, cost-effectiveness and efficiency will be relatively simple. The data needed are in the public domain, available on a regular basis, and at relatively low cost. At the lowest level of precision, this data require little manipulation.

For the market-clearing and ancillary services prices, the balancing act will be much more difficult. The data and labor intensive needs of our models requires a great commitment of monetary and human resources even at the lowest level of precision. We do not think that alternative forecasts of market-clearing and ancillary prices from non-governmental sources will be readily available as private forecasters will require confidentiality agreements to prevent widespread dissemination of such forecasts. Without the confidentiality agreements, private forecasters would lose the ability to sell their forecasts to other parties. The Energy Commission could fill the role of providing an unbiased forecast of these prices that would be available to all parties. The Energy Commission forecast would not supplant the need for private forecasts, but could be used as a benchmark of their reasonableness.

7.b EXAMPLE #2: USING STAFF'S APPROACH TO ANALYZING FUTURE DATA NEEDS -- NATURAL GAS PRICE AND SUPPLY FORECASTS

Activity: Forecast Natural Gas Price and Supply

Level of Precision and Methodology

The preparation of a natural gas supply and price forecast, particularly for electricity generation, is based on an understanding of the natural gas market in the United States, Canada, and most recently in the budding gas market in northern Mexico. Within a utility distribution system, there is a unique interplay between supply and price, depending on how the several sectors demand may shift. A long-term increase in demand, for example, could increase the border price but reduce the instate utility distribution charge. Conversely, a long-term reduction in demand could reduce the border price, but increase the instate utility charge.

The Energy Commission uses the NARG model to evaluate the North America natural gas market and forecast a California delivered natural gas supply and price for each supply source. Within California, transportation and distribution costs are determined by sector for each utility service area. This is based on current CPUC decisions and policies. The two price components, California border price and instate utility cost are added to provide a delivered price for each end-use sector[3].

Sources of Data, Mechanisms of Data Collection

Data needs are met by a variety of sources to prepare a historical prospective as well as calculate the base year conditions. These include federal governmental agencies in the US and Canada, industrial organizations, literature and Energy Commission contracts.

To run the NARG model, Staff uses historical throughput data for each of the pipelines delivering natural gas to California or intrastate producers/transporters with in the state. Specific California historical natural gas supply delivered by pipelines to utilities are compiled from QFER From 6A and the ***California Gas Report***. This information is supplemented by QFER Form 10A, which provides interstate pipeline supply and California production, that is delivered directly to end-users. Additionally, utility Annual Reports to the California Public Utilities Commission are used to provide further delineation on utility supply which is not clearly provided in other sources. Finally, the ***Annual Report of the Oil and Gas Supervisor,*** published by the Division of Oil And Gas provides the total quantity of natural gas produced in the State.

The QFER data should meet much of the required California historical data needs. The requested data is designed to specifically meet the forecasting requirements. Other sources of data, such as the US EIA Form 176 provides only part of the data needed to perform Energy Commission natural gas analysis. The US EIA Form 176 is a single form used to obtain information from both interstate and intrastate pipelines, distributors, and natural gas processors. It lacks key information on actual pipeline deliveries to each utility, class of end-user it directly may serve, and intrastate revenues needed to calculate instate historical transportation costs.

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[3] A more detailed discussion on the Energy Commission's natural gas supply and price forecasting methodology can be found in the ***1995 Natural Gas Market Outlook***.

Historical data needs for the rest of the US are obtained from various US EIA publications that provide state and regional natural gas proven reserves, production, and consumption and interstate movement of natural gas. Similar Canadian historical data is provided by the Canadian National Energy Board.

Forecasted natural gas demand needed to perform the supply and price forecast is obtained from three sources. Forecasted California residential, commercial and industrial demand is obtained from the Energy Commission's Demand Forecasting Office, while the Electricity Analysis Office provides natural gas demand for electricity generation. Demand projections for the rest of the US are obtained from the Gas Research Institute's annual baseline forecast. Canadian demand for natural gas is obtained from the Canadian National Energy Board.

Recently a new table has been introduced in the report. This table. "Statewide Sources and Disposition Summary," links end-use consumption with pipelines used to delivery the gas. From QFER Form 10A, key data on natural gas delivered to nonutility customers by pipelines is obtained. Given that 19 percent of the California natural gas deliveries do not use the utility distribution system, the absence of QFER would seriously understate the true natural gas consumption in the state.

7.b.3 EXAMPLE #3: USING STAFF'S APPROACH TO ANALYZING FUTURE DATA NEEDS -- BAY AREA AQMD BOILER RULE REVISION

Activity: Assist in Bay Area Air Quality Management District Revision PG&E Boiler NO_x Emission Rule

Level of Precision: The rule could effectively constrain property rights by setting limits on the economic use of a capital asset. Criteria air pollutant emissions have potential health, environmental and economic impacts. Therefore, it is appropriate to spend considerable effort on estimates of the range of generation that may be expected from these sources and identifying sources of uncertainty affecting the validity of the estimates.

Data Requirements: The data requirements are a function of the specific questions addressed in the rulemaking. If the rulemaking considers only replacing the existing rule's system emission rate limit governing emissions from all PG&E-owned plants, with a revised rule that keeps the same emission rate limit but applies it separately to smaller "systems" (combination of units under common ownership), then it can be concluded with little data that emissions from the plants could be no greater with the rule change than without it. Costs of compliance may be higher with the revised rule. If the rulemaking assessed compliance cost differences, the required data would necessarily have to be collected within the rulemaking itself.

Sources of Data: The data sources depend on the data requirements. The current owner is a source of information about its operation of the unit. Prospective future owners are the best source of information about their operation of the units they purchase.

Mechanism of Data Collection: Data are best collected from the source operating the unit. Other parties may provide independent analysis with or review of that data.

Availability and timeliness: Data for specific purposes are best collected ad hoc in association with that purpose. District regulatory authority and securing the benefits to be achieved by the revision should motivate timely collection of the required data.

Confidentiality concerns and constraints*:* Prospective new owners of units may be hesitant to provide necessary data about their intended economic use of the asset to an open forum for a general purpose. There should be less hesitation in providing the required data, with or without some confidentiality guarantees, as a necessary step in getting a permit to operate.

Balancing*:* The conflicting concerns of need for protecting the public's health and protecting the owner's proprietary interest are best identified and balanced within the process once the specific alternatives and data requirements are identified.

8. PHASING OF SUPPLY-SIDE DATA REPORTING REQUIREMENTS

This section builds upon the preceding review of electricity supply-side analytic activities by proposing a multi-phase examination of various "modules" in a sequential fashion. A sequential examination of different topics seems unavoidable due to the very broad scope of the OIR/OIIP as adopted by the Commission, the large number of specialized communities within the overall energy industry that are interested in any specific topic area, and the abilities of AHIC and its supporting Staff to evaluate and decide numerous controversial issues.

8.a Overview

Staff proposes five phases in which the totality of energy supply topical areas would be examined through time. These are:

1. Review of Electricity Supply Analysis Issues
2. Phasing Plan of Data Requirements
3. Data Requirements for Urgent Legislative Directives
4. Other Electricity Data Reporting Requirements and Electricity Analysis and Policy Reporting Requirements
5. Natural Gas, Petroleum Product, and Coal Reporting Requirements

In general, these five "modules" and individual topical areas within them address specific data and information reporting requirements that exist and that should be repealed, retained with modifications, or expanded to address function responsibilities of the Energy Commission. Given the urgent nature of electricity restructuring, and clear need to make changes to conform to the restructured industry, the initial modules address electricity topics, while later phases address natural gas and petroleum fuels.

Staff believes that some structure of this sort is necessary for this proceeding to proceed in an orderly manner to complete the very comprehensive assignment made to AHIC in the OIR and OIIP adoption orders. Among the most crucial is the timing of each phase. A strictly sequential proceeding, waiting for each preceding phase to be completed before a subsequent one is initiated, combined with the existence of two existing phases (confidentiality and historic end-use consumption data) would result in a very lengthy proceeding. Staff is generally proposing that some paralleling of phases be undertaken, but this has to be carefully managed by the Committee and its project manager. Staff is open to refinement of these suggestions prior to their endorsement by the Committee.

8.b. Description of Specific Phases

This subsection addresses each of the four remaining "modules"; since module "1" is the subject of the earlier portions of this paper. Each is briefly described in terms of scope, AHIC role versus that of other CEC oversight mechanisms, and timeframe.

Phase 2: Phasing Plan of Data Requirements

Given the extremely broad charge given to the Committee as a result of the OIIP adopted by the Energy Commission in June 1997, it is essential that AHIC develop an overall view of this proceeding to guide participation by various parties.

a. Input from Parties Concerning Functions and Activities

The earlier portions of this paper provide initial efforts by Staff to describe the activities that require various kinds of electricity supply data and that may justify imposition of reporting requirements. Staff has developed this perspective based on its current work activities as shaped by the Commission's Strategic Plan (approved by the Governor's Office in July 1997) and the direction it has received while electric industry restructuring has been in process. Given the input from other parties in the ongoing phases of this proceeding, it is clear that other parties may have different views.

b. AHIC Scoping Document/Decision

The AHIC has previously announced its intent to develop and publish a scoping document that informs the industry concerning the general approach that AHIC intends to follow in completing the OIR and OIIP process initiated by the Commission in May and June, 1997, respectively. Staff believes it is important for the policy issues of Energy Commission functions be resolved early, so that the participants in this proceeding representing the various elements of the energy industry can focus on the implementation issues of data reporting requirements to support Energy Commission functions.

In order for the AHIC to clearly communicate its proposals to the industry, Staff suggests that AHIC develop a draft decision and circulate it for comments prior to adoption. This may be the most efficient means to focus the energies of the parties on any possible disputes.

c. Proposed Schedule

December 1997 through January 1998.

Phase 3: Data Requirements for Urgent Legislative Directives

Two legislative initiatives were enacted in 1997 with immediate consequences for reporting requirements. Both of these initiatives expand the role of the Energy Commission compared to that prior to restructuring, and both require a continuation of Energy Commission collection of data from the industry to ensure responsible expenditure of public funds and protection of consumers.

SB 90 establishes the broad outlines of the renewables program that is to use approximately $540 million in public goods surcharge funds over four years to develop a renewables generation market. SB 1305 establishes a generation labeling and verification program, which can be applied either UDC default service or renewable product offerings of ESPs. Both programs are administered by the Energy Commission, and both programs have legislatively dictated startup dates that necessitate supply-side data collection assessments. Therefore, before AHIC has been able to organize a structure to examine the total supply-side energy reporting requirements process, the specific schedules of these two programs have launched "fast-track" implementation efforts. However, since some of the same Staff are working on all of these programs, coordination is inherent in these work activities.

a. Description of SB 90 Renewables Generation/Customer Credit Program

SB 90 creates several programs, funded through public goods surcharges collected from end-use customers, that are administered by the Energy Commission. There programs, under the supervision of the Renewables Committee, are being designed on an expedited

basis to permit them to start up 1/1/98. The existing generation program provides subsidies to existing renewable generation. The customer credit program is intended to provide subsidies to end-use customers that reduces the net cost of consumer purchases of renewable generation. Proposals for program administration include end-use sales and renewable generation reporting requirements as the basis for payments from the Energy Commission to participating ESPs and to ensure generation procured and sold via this program is eligible.

Staff believes that it is important to coordinate the reporting requirements of these SB 90 programs with the broader reporting requirements that would be enacted through Energy Commission regulations and applicable to all ESPs and all generators, not just those choosing to participate in SB 90 programs. In the short-term, special reporting is necessary because the potential obligation for payment starts January 1, 1998 and potential award recipients need to know what documentation they must provide.

Staff is investigating whether the data needs for operation of these programs can be supported, in the long-term, by the broader reporting requirements applicable to all ESPs and all generators, supplanting special reporting mechanisms created for the start-up of programs. The need for long-term special reporting requirements will depend on program issues such as need for signed invoices, verification, audit trail requirements, consistency, and reporting burden.

b. Description of SB 1305 Renewables Generation/Retail Disclosure Requirements

SB 1305 created additional generation and end-use customer sales reporting requirements beyond those of SB 90, even though SB 1305 is largely oriented to renewable generation. Like the programs created by SB 90, those of SB 1305 are on a very fast track to permit their implementation on 1/1/98. Recently, the Energy Commission assigned responsibility for development of reporting requirements to AHIC.

(1) Data Obtained from In-state Generators via System Operators

A key feature of SB 1305 is its requirement that generator metering data provided to the system operators be made available to the Energy Commission for use in verifying renewable provider claims. Staff is now in the process of clarifying how the actual generator production data reported to the system operators may satisfy the Energy Commission's needs, in the hopes of minimizing duplicative reporting requirements on generators. Current plans call for the reporting agreements to be operational by July, 1998.

(2) Data Obtained from Out-of-State Generators

Out-of-State generators are not required by SB 1305 to submit data to system operations which accessible to the Energy Commission; system operators must make available the aggregate amount recorded at border tie points. But, the Energy Commission is required to determine net system power, which includes generation from out-of-state which is consumed in-state. Thus, there is a reporting gap which must be filled with other sources. Out-of-state generation claimed as specific purchases may be required by CEC regulation to report directly to the CEC. These issues are being addressed in the SB 1305 proceeding.

(3) End-Use Customer Sales Data

SB 1305 also requires access to renewable provider end-use customer sales data for certain program verification purposes. Such sales data might be provided by a general ESP end-

use customer data reporting requirement, such as the ones proposed by Staff in the September 18, 1997 proposal concerning energy consumption data needs. The AHIC is now reviewing various detailed features implicit in Staff's September 18, 1997 proposal as a result of the AHIC Workshop held October 30, 1997.

(4) Verification of Environmental Claims and Annual Retail Comparison Report

Finally, SB 1305 gives the Energy Commission authority to environmental claims of retail suppliers and to report annually comparing specific purchase claims with recorded generation. The shape of potential data reporting under this element of the program will be addressed in the SB 1305 proceeding.

c. Proposed Schedule

November 1997 through June 1998. The long schedule is necessary because system operators will not have their data systems in place and be available to execute Memoranda of Understanding until the first and second quarters of 1998.

Phase 4: Other Electricity Data Reporting Requirements and Electricity Analysis and Policy Reporting Requirements

Phase 4 consists of those other reporting requirements for participants in the electricity industry concerning historic data, and all reporting requirements that mandate submittal of information concerning future activity. All of these informational reports were used as input into the Energy Commissions statutory mandates to oversee utility demand forecasts, resource plans, and to perform an integrated assessment of need as one input into the Energy Commission's powerplant licensing authority (PRC Section 25500 et. seq.).

These requirements were established in the original Warren-Alquist Act (Public Resource Code Section 25300 et. seq.), Energy Commission regulations (Title 20, Sections 1345, 1347, and 1348), and Common Forecasting Methodology (CFM) Forms and Instructions adopted by the Energy Commission preceding each biennial submittal of these information. There are four different elements of these CFM reporting requirements, each with their own set of specialists within the Energy Commission, utilities, and various interested parties that have participated in Energy Commission Electricity Report proceedings.

a. Description of QFER Supply-side Requirements

The CEC has in place generation reporting requirements as part of QFER regulations, specifically Title 20, Section 1304. The generator reporting requirements proposed as part of the SB 90 and SB 1305 programs are somewhat similar to existing reporting requirements for generation now imposed on utilities. It is possible that a generalization of the existing QFER supply-side regulations could develop generator reporting requirements that would satisfy SB 90 and SB 1305 (supplemental requirements of direct generator reporting), while satisfying other data needs stemming from more general Energy Commission monitoring and oversight roles.

Staff proposes that modification of QFER supply-side reporting requirements examine both the specialized needs of these two programs, any other special purpose programmatic requirements, more general supply-side data needs for industry monitoring and policy assessments once the immediate development of programmatic reporting requirements is completed. This sequential examination of data needs permits the immediate needs of the programs to be established and functioning while permitting more time to determine what

the more general needs for supply-side data encompass. Staff proposes that specialized program reporting requirements be coordinated with these broader regulatory reporting requirements and that duplication be reduced whenever benefits would warrant.

b. Description of CFM Reporting Requirements

PRC Sections 25300-25301 impose a "common forecasting methodology" reporting requirement on electric utilities, which has evolved under Energy Commission oversight into a series of documentation requirements for the resource plans and supporting analyses commonly undertaken by utilities for planning purposes. To implement these requirements, the Energy Commission has in place a comprehensive set of reporting requirements for utilities that have been used in the biennial Electricity Report proceeding to prepare an integrated assessment of need, which is used both within the Energy Commission for powerplant licensing as well as at the CPUC as one input into qualifying facility contract solicitations. These CFM requirements were implemented through biennially adopted Forms and Instructions that provide explicit guidance for documenting demand forecasts, estimates of energy savings from demand-side management programs, generation and import resource plans, and transmission line expansions.

In general, Staff and most parties anticipate a major reduction in reporting requirements concerning future plans, consistent with a reduced role for centralized planning assessments and regulatory-imposed resource acquisition decisions. The sort of in-depth documentation of demand forecasts, DSM program savings, resource plans, and supporting data collected through various iterations of the Electricity Report proceedings will undergo major changes, if they survive at all. Staff believes such changes should be directly linked to the responsibilities that various entities play in the restructured electricity market, and the burden that decisions made by these entities can result in financial obligations on captive consumers. Where obligations are low and burdens are born by shareholders, then reporting requirements to satisfy examination of decisions should be low or non-existent. Where obligatory responsibilities are high and decisions can impose costs on captive consumers or affect state policies, then reporting requirements that permit regulatory oversight for such decisions should be correspondingly high.

A particular challenge for the development of revised reporting requirements for supply-side data obtained as part of utility resource plan documentation is powerplant physical characteristics and operating assumptions. These data are essential inputs into any of the assessment tools (ELFIN, UPLAN, MAPS, etc.) that the industry has used as the basis for resource assessment. Clearly these data are of greater sensitivity in a competitive generation market. Since successful bidding into the open power exchanges or marketing in the bilateral contract market may revolve around very slight differences in production costs and necessary margins, many supply-side details will be considered trade secrets by facility owners. Staff anticipates a careful examination of its proposed data needs and a strong focus on possible confidentiality issues when any specific data requirements proposal are made.

The CEC has periodically requested various transmission system data from utilities when necessary to satisfy specific legislative assignments. For example, during the period of the Garamendi Report, the CEC acquired and assessed various transmission line data as an element of the transmission corridor focus of that effort. Transmission system assessment are clearly an important element of reliability assessment efforts, and that have not been transformed into a competitive portion of the industry. Rather than develop any specific, recurring data reporting requirements for transmission systems, the Staff proposes to work cooperatively with the ISO and various transmission owners and to acquire data from them and WRTA, FERC, DOE, the CPUC or WSCC as necessary.

c. Description of Utility Data Plan Reporting Requirements

An adjunct to the demand-side QFER and CFM requirements placed on utilities were Data Plan regulations enacted in 1990 (Title 20, Section 1344). Utilities were required to develop plans for implementation of end-use customer surveys, load research, and other projects designed to understand how various classes of customers used energy. In general, these regulations codified pre-existing utility activities and did not especially increase total expenditures on end-use customer data collection. The regulations were designed to allow considerable flexibility by allowing either a prescriptive set of activities or an alternative "performance" package judged to provide equivalently useful information. In additional to the internal uses of these data by utilities, the results of these data collection activities and research projects were submitted to the Energy Commission for use by its Staff, principally in developing demand forecasts and in evaluation of demand-side management programs.

There are many challenges to be overcome in determining how these reporting requirements might be revised. Also like the previous sets of data, Staff believes that reporting requirements should be directly linked to the responsibilities of the entity in question. As an example, where utilities as UDCs have no long-term demand forecasting activities, because there are no obligations to acquire power supplies to support load growth, then the data requirements specific to such long-term demand forecasts can be eliminated. Therefore, Staff anticipates that sectoral surveys of physical features of various customer classes used for end-use demand forecasting models will no longer be required of UDCs. Alternatively, because UDCs continue to have various distribution planning obligations, and because various distribution tariff rate design options will require data concerning hourly loads for the system and its various customer classes, Staff expects that UDCs will continue to have similar system and sectoral load research data reporting requirements.

An additional complication of these reporting requirements, and their adjustment to the new responsibilities of UDCs, is the emergence of California Board for Energy Efficiency (CBEE) as a semi-autonomous entity designing and operating various market transformation and other energy efficiency programs under the supervision of the CPUC. CBEE will require many of the same kinds of data formerly supplied by utilities under the Energy Commission's Data Plan reporting requirements. Discussions are now underway with CBEE representatives concerning the data needs of CBEE, how CBEE and Energy Commission data needs can be coordinated, and mechanisms to obtain and share these data. Once these discussions, under the general supervision of the Efficiency Programs Committee, become more clear, then revision of the current reporting requirements will be undertaken.

d. Proposed Schedule

March 1998 through October 1998.

<u>Phase 5: Natural Gas, Petroleum Product and Coal Reporting Requirements</u>

Another phase of this proceeding should address natural gas and petroleum product reporting requirements. Since these are much less affected by the restructuring of the electricity industry, there has been less concern about needs for changes in these Energy Commission regulations.

As a general observation, Staff believes that changes can be postponed until the electricity industry issues have been completed. The existing programs of the Energy Commission

that must rely upon these data are under the supervision of the Fuels Committee. A biennial Fuels Report proceeding is now in an active phase, and the Energy Commission is undertaking assessment of certain issues of motor vehicle fuel supply associated with the broad review of concerns regarding methyl butyl tertiary ethers (MTBE).

a. Description of Natural Gas Industry Requirements

In addition to energy consumption data reporting requirements now under review in parallel with electricity reporting requirements, there are several other natural gas industry requirements that should be reconsidered.

(1) QFER Natural Gas Production/Transport Requirements

Current QFER reporting requirements require gas transported into California and gas produced in California to be reported to the Energy Commission. These data are used by the Staff to develop the Natural Gas Outlook (a subsidiary document routinely prepared as a element of the Fuels Report proceeding).

(2) Supply/Demand Projections -- California Gas Report

Energy Commission regulations requiring documentation of demand forecasts and supply plans are presently satisfied by the California Gas Report (Title 20, Section 1349), prepared by utilities under the direct supervision of the CPUC and the general guidance of the CEC. Since the natural gas utilities have been only partially deregulated, there may be greater justification for retaining these planning documentation requirements. Since the CPUC has not yet commenced the natural gas industry review anticipated in its 1997 workplan, a delay of CEC review of natural gas industry reporting requirements allows for better coordination with any CPUC changes in the scope of responsibilities of utilities and private companies.

(3) Gas Utility Demand-Side Data Plan Reporting Requirements

The demand-side Data Plan reporting requirements applicable to natural gas utilities are identical to those for electric utilities. Given the dual fuel nature of two of the major utilities, electric and natural gas utility programs were operated identically and often jointly.

b. Description of PIIRA Petroleum Product Requirements

The Petroleum Industry Information Reporting Act (PIIRA) was established by the legislature to ensure that state government had the ability to understand petroleum production, refining, import, and export activity. (PRC Sections 25350 - 366.) Substantial reporting requirements exist with special confidentiality provisions different from those for electric and gas industries, due to the competitive nature of the petroleum industries.

c. Description of Coal Price Forecast

Preparing electricity market price estimates and system simulations require estimates of coal prices for large out-of-state coal generation stations. In the past, the Fuels Resources Office has hired a contractor to obtain its own data and prepare a forecast.

d. Proposed Schedule

November 1998 through January 1999.